

IN THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

1. – 15. (Cancelled)

16. (Currently Amended) A method of infusing a fluid into a body of a user, the method comprising:

obtaining a current blood glucose concentration of the user;
generating a controller input based on the current blood glucose concentration;
generating commands by a proportional plus, integral plus, derivative (PID) controller from the controller input using at least one preset controller gain, wherein the PID controller is a bilinear PID controller; and
infusing a liquid the fluid based on the commands from the PID controller;
wherein the bilinear PID controller accurately estimates a hypoglycemic glucose excursion.

17. – 31. (Cancelled)

32. (Currently Amended) A system for infusing a fluid into a body of a user, the system comprising:

means for obtaining a current blood glucose concentration of the user;
means for generating a controller input based on the current blood glucose concentration;
means for generating commands by a proportional plus, integral plus, derivative (PID) controller from the controller input using at least one preset controller gain, wherein the PID controller is a bilinear PID controller; and
means for infusing a liquid the fluid based on the commands from the PID controller;
wherein the bilinear PID controller accurately estimates a hypoglycemic glucose excursion.

33. (New) The method of infusing a fluid into a body of a user in accordance with claim 16, wherein a proportional component and a derivative component of the PID controller may be combined to represent a first phase insulin response, and an integral component of the PID controller represents a second phase insulin response.

34. (New) The system for infusing a fluid into a body of a user in accordance with claim 32, wherein a proportional component and a derivative component of the PID controller may be combined to represent a first phase insulin response, and an integral component of the PID controller represents a second phase insulin response.